BITS & PIECES

QUIKDATA CLOSED JULY 4TH WEEK!

Don't forget as is our policy we will be totally closed for business the July 4th week, from June 30th until July 8th!! We will open again for normal business hours on Monday, July 9th. The bulletin board will be active, and both the fax and answering machine will be activated, but there will be no orders taken or shipped, nor any support available. The purpose of this yearly closing is for a well deserved vacation (and to help prevent any possible nervous, mental, or physical breakdowns! I trust you will all understand.

Be certain to read later in this issue on our **QUIKDATA BITS** column for some good prices on our 12 Mhz PC/XT machine, some computers we are liquidating, and a great deal on some brand new Zenith 286 LP computers!

ZDS ENHANCES MINISPORT
20MB HARD DRIVE, BRIGHTER SCREEN

Zenith Data Systems (ZDS) introduced an enhanced model of its MinisPort[tm] notebook personal computer (PC) that features a fast 20-megabyte (MB) 2.5-inch hard disk drive, a new Crystal Bright screen and a faster processor.

The MinisPort HD is based on a 10-megahertz 80C88 processor, which may be slowed to 4.77 megahertz to increase battery life.

"We've made the MinisPort HD the thinnest notebook PC with a hard disk drive by eliminating all unnecessary size and weight," said ZDS President and Chief Executive Officer John P. Frank. "As a result, this system is ideal for even the most mobile computer user, and is powerful enough for both business and education applications."

The MinisPort HD features a 2.5-inch, 20MB hard disk drive developed by Connor Peripherals, San Jose, Calif. This hard disk is no larger than a deck of playing cards and offers quick data accesses rated at 23 milliseconds with 1:1 interleave. "This level of performance is typically found only on high-performance desktop systems," Frank said.

The system's optional 3.5-inch, 720-kilobyte (K) external floppy disk drive, which runs off the system's power, gives users the option of carrying a floppy drive with them or leaving the added weight behind.

The 6-pound (with battery) MinisPort HD has a new Crystal Bright screen that displays black characters against a backlit bright white background. This new CGA screen can display eight shades - from light grey to black - and is brighter than the display of the other MinisPort models for easy readability [a major complaint of the previous MinisPort models, after ZDS said the screen was better than that in their laptops]. The screen's viewable area is 3.3 inches high by 8.5 inches wide and measures 9.5 inches diagonally.

The MinisPort HD operates for about three hours using its easily removable nickel-cadmium (NiCad) battery pack, which recharges

in less than 2.5 hours. Battery life can be increased dramatically and programs will run faster while working from the silicon disk rather than the hard or floppy disk drive. When the system is turned off, data in the silicon disk is backed by the NiCad battery.

The system has 1MB of memory, of which 360 kilobytes can be allocated as an ultra-fast "silicon disk drive." Rupp Corp.'s FastLynx LX[tm] (an easy-to-use, self-uploading data transfer program) and an abridged version of MS-DOS[tm] 3.3 Plus is stored in the system's non-erasable read-only-memory. A complete copy of MS-DOS also is factory-installed on the hard disk. Also featured are standard I/O ports, including serial, parallel, floppy disk drive and color monitor ports.

Other MinisPort HD features include:
9-pin RS-232-C serial port; Centronics-compatible parallel port; 9-pin RGB video output connector; Slot for optional 2400-baud AutoSync or 1200-baud modem; 80-key, full-size keyboard with embedded numeric keypad; 110/240 VAC power supply and battery charger; 3-headed serial cable for FastLynx LX data transfers; One-year warranty.

MinisPort HD options include:
External 5.25-inch 360K floppy disk drive; External 2-inch 720K floppy disk drive; 2400-baud AutoSync modem; 1200-baud modem; Extra NiCad battery packs; Monitor stand; Nylon carrying case with pocket; Leatherette slipcover.

The suggested retail price for the MinisPort Model 20 is $2,799. ZDS has begun shipping the MinisPort HD, which measures 12.4"W x 9.8"D x 1.3"H.

UNIVERSITY OF CA, OUTFITS
MBA STUDENTS WITH NOTEBOOK PC's

The rustling of pages soon will be eliminated by a new type of notebook.

This fall, graduate students entering the University of California, Irvine, Executive Master's of Business Administration program will be outfitted with a Zenith Data Systems (ZDS) MinisPort[tm] HD notebook computer to accompany them to classes.

"We view the MinisPort HD as an instructional tool, equal in importance to books and course materials," said Ann Jennings, director of the Executive M.B.A. program. "Our well-rounded curriculum assures that each graduating student has the skills necessary to make prudent business decisions. Personal computers are an essential aid to high-level business decisions."

For the next three years, each of the M.B.A. candidates admitted annually to the two-year Executive program will be issued a MinisPort HD. The price of the notebook computer, as well as books, and other education materials are included in the tuition. Faculty members also will be issued a system.

According to Jennings, "Of the systems we tested, the MinisPort HD was the only hard disk notebook PC that allowed us to get through a three-hour class on one battery charge."

ZDS INSTALLS MICROSOFT WINDOWS 3.0
ASYMETRIX TOOLBOOK ON DESKTOP PCs

Advancing the definition of the personal computer (PC), Zenith Data Systems (ZDS) announced that it is now factory-installing

Microsoft Windows 3.0 on the hard disk drives of all '286- and '386-based desktop PCs. ZDS also is installing ToolBook 1.0, Asymetrix Corp.'s new Windows-based software construction set, on all '386-based desktop systems.

"These tools are the dashboard which allows users to drive the most powerful PCs and software without ever opening a manual," said John P. Frank, ZDS president and chief executive officer. "We're immediately inviting our customers into a computing environment where all software responds to the user in the same way and taps the hardware's full capabilities."

We're delighted with Zenith Data Systems' commitment to Windows 3.0 and graphical user interface computing," said Bill Gates, Microsoft chairman and chief executive officer. "ZDS' strategy to make Windows 3.0 a standard feature is a dramatic extension of the company's long-standing relationship with Microsoft, which has made ZDS the largest provider of Windows worldwide."

ZDS has shipped more copies of Windows than any other PC manufacturer by bundling it with all hard-drive desktop systems since 1985 [I'd like to know how many are using it, not how many are being shipped -ed].

ZDS also is bundling a Microsoft Mouse and installing MS-DOS 4.0 on all '286 and '386 desktop PCs. For systems already in dealer inventories, ZDS will provide its resellers with copies of Windows 3.0 and ToolBook, as well as a mouse, to bundle.

ZDS REALIGNS TOP EXECS

Groupe Bull's Zenith Data Systems unit last week reshuffled its senior management roster, shifting several top executives to new jobs and reducing the direct control of John Frank, president and chief executive, over such areas as engineering, customer service and business planning.

The management changes come five months after Groupe Bull bought ZDS from Zenith Electronics Corp. and follow a 78 percent decline in operating profits and a 24 percent dip in sales at the PC vendor during 1989, as reported recently by Zenith Electronics (EN, April 9).

Much of the tail-off in ZDS business came in late 1989, following the unit's November loss of the $700 million Desktop III Air Force PC contract. The PC maker, which gets more than a third of its sales from the government, has since also had a $534 million PC upgrade contract from the Navy thrown out by the General Services Administration (EN, April 9).

A ZDS spokesman insisted that the reorganization "was not a reactionary move" related to the 1989 showing. He described it as "more of a pro-active step to strengthen our position in the market" and push more decision-making responsibilities to management levels below Mr. Frank.

He would not comment on current business conditions at ZDS [not very good right now -ed], beyond noting that executives are expecting changes implemented at the start of the year in the company's reseller program and discount schedule to have a positive effect on sales during 1990.

Mr. Frank has one less person reporting to him following the reorganization, ZDS said. However, the executives in charge of engineering and customer service no longer report to him, while a new vice president of planning who does report to Mr. Frank holds duties Mr. Frank had handled.

ZDS combined product development and engineering under Andrew Czernek, who was named vice president of product strategy and development. He was vice president of marketing.

EaZy PC MEMORY EXPANSION

Expand the 512K base memory of the Zenith EaZy PC computer to 640K with the EZM-128 memory expansion. The EZM-128 consists of a memory circuit board, a protective cover and installation documentation. The circuit board plugs into the option connector on the back of the computer. The cover encloses the circuit board and attaches to the rear of the computer with two screws. The EZM-128 is priced at $125 each and will begin shipping towards the end of July.

In development for the EaZy PC is the EZCLOCK board. This is (the prototype is completed and working) a calendar/clock circuit board that installs piggy-back on the EZM-128 memory board. The clock is quartz controlled and backed up with a long life (many years) lithium battery. It is based on the same technology used in the SmartWatch module and avoids the need to disassemble the EaZy PC for installation as is required by the SmartWatch. The EZCLOCK will be priced at about $35 and should ship in August.

Quikdata will be carrying both of these products when available. We were the ones who put the bug in Dave of FBE to get this project going after receiving many calls for memory expansions after Zenith very prematurely discontinued the memory and modem option for the brainstorm computer (and sent thousands of EaZy PC computers to the liquidators!!

Dave Brockman, FBE Research Company Inc., P.O. Box 68234, Seattle, WA 98168 or telephone 206-246-9815 M-F 9-5 Pacific Time.

HDOS 3 PARTLY READY

Daniel Jerome, the one who keyed in the info and edited the HDOS 2.0 manual, writes:

"I just wanted to drop you a note to tell you that the HDOS 3.02 project is completed. In fact, I just finished it up yesterday, and have been making disk copies for the other members of the team. As you know, Richard Musgrave is the programmer, Terry Hall is Chief of Quality, and I am the writer.

"When I mailed the disks, I was at first elated, because this project that I put so much effort into was finally done. Then I must have gotten some "post-partum" blues for a time until I started thinking about all of the H89 people out there in the field who will be enjoying the new system. Now I think it was a very good idea."

Kirk Thompson now has HDOS 3.0 available for H8 and H/Z-89/90 users ready, but at this time the documentation is on disk only. Manuals will be available in a little bit now, and at that time Quikdata will be handling the completed version.

Kirk writes: "An upgrade to HDOS 3.0, as distributed by William G. Parrott Jr., for some years, is now available to the H-8 and H/Z-89/90 user. The system was prepared by Richard Musgrave and the voluminous documentation was written and edited by Daniel N. Jerome who keyed and updated the HDOS 2.0 manual for The Staunch 8/89'er.

"The system will boot on virtually all '89/90's. The H8 **must** be capable of remapping memory as when booting CP/M. Hence, the latter requires a Z-80 CPU (ORG-0) card and front-panel ROM such as XCON8 (PAM-8 will **not** work)... Most software written for HDOS 2.0 will run without modification under 3.02. Exceptions include those programs which directly access the MTR or H-17 ROMs (those addresses are now used for other purposes), Steve Robbins' EDIT19 (but a patched version is available from Staunch), and Softshop's UD.DVD. In most cases, commercial or public domain substitutes are available for these programs. Contact **Staunch** for further information... Almost any generic

terminal may be used (even the H-9!) because the terminal driver is separate from the system core. However, a number of the utilities on the distribution disk **require** the H/Z-19/89. If you are **not** using the latter, include this information when ordering.

"...The documentation for this immediate release is **on-disk**; when printed on standard 9-1/2 x 11 fanfold, it is 3 inches thick! The package includes a 3-inch, D-ring binder and section dividers for the 14 chapters. A **printed** manual is in preparation, and if you order the system with the later, the system will be promptly shipped with adequate documentation to get you started. The printed manual will be shipped as soon as it becomes available at no additional cost.

"The price of the package is $60, including UPS shipping. When ordering, clearly indicate the manual (on-disk or commercially printed) you want and the media (standard or double sided hard sector; single or double-sided soft sector; or eight-inch) you need. Send your order to Kirk Thompson/ POB 548/ West Branch, IA 52358/ (319) 643-7136 (home phone).

CLIP ART TAKEN FROM CSC

Some time ago I purchased Diagraph, which was a neat package with lots of ready made clip-art. Computer Support Corporation of Dallas, created and digitized the clip art. So far so good. Along comes big guy Software Publishing Company (SPC), the developer of the popular Harvard Graphics, who takes hundreds of CSC's clip arts, and perhaps changes a line here, or a dash there, and uses them in their package! Then SPC has the nerve to file suit against CSC saying they cannot copyright the clip art! CSC notified their users and sent a sample page showing many comparisons of the CSC art vs the Harvard stuff, and the slight difference, if any is just ridiculous!

Thus CSC has filed suit in the U.S. District Court alleging copyright infringement by Software Publishing Corporation of Mountain View, California. The suit alleges that hundreds of clip-art images contained on Computer Support Corporations products were copied by SPC without permission.

An injunction would halt sales of the current version of Harvard Graphics, along with the Harvard Graphics Military Symbols and Business Symbols accessory products. CSC has also requested damages, profits from Harvard Graphics sales, attorneys' fees and court costs.

Now get this. The action is a counterclaim against an SPC suit filed on April 13, 1990 alleging that CSC's software programs and clip art are not protected by U.S. copyright laws.

Well, we'll see. I hope Harvard Graphics gets their smart clip-art britches sued off of them. For now I suggest a boycott against any Harvard Graphics products.

MISCELLANEOUS BITS

* I'm sad to have to report that **Doc William Campbell is not in too great shape**. His wife wrote to tell me he was in the hospital and had a triple by-pass coronary operation on May 7th, which happens to be my birthday. I believe Doc already had a bypass some time ago. Doc has always been a very strong supporter of the H/Z community. He started out in the old H8/H89 days and has come all the way to the PC era. I sure hope he recovers well. For those of you who pray, remember Bill in your prayers.

* I'm happy to report that **Paul Herman is recovering**, but frustrated after I found out the seriousness of his accident. He writes in his Z-100 LifeLine, April issue (received in June) "On April 30th, I was rolling happily on my way down the road on my Honda 650 motorcycle when another motorist decided she wanted to drive on my side of the road for awhile. As she turned left in front of me, Honda met automobile... and I'm sorry to report

that car won. The only consolation is that I hear the car was damaged so badly that it had to be towed away.

"My Honda was totaled. On the other hand, I guess what remained of me exceeded book value to some extent, because the paramedics decided to scrape me up and take me to the hospital. And I would like to take this opportunity to personally thank whoever it was who invented nitrous oxide [laughing gas].

"The result of all this is a left femur broken in two places, a broken right ankle, and the usual assortment of lacerations, abrasions, and bruises you would expect from such an incident. I spent about 10 days in the hospital, but am now home again, complete with stainless steel pins, plates, and bolts. I'm ready to hit the comeback trail, and at this writing am trying to spend at least three to four hours a day in the office..."

Paul is now in a wheelchair and says "thank goodness I am in the computer business!. I'd be in really bad shape if I actually had to WORK for a living!" Good sense of humor Paul!

I'm frustrated because I drive a 750 cc Kaw and by alertness and defensive driving have avoided many an accident. I'm frustrated because at any second that could happen to me. I'm frustrated because so many people that drive bicycles and motorcycles are carelessly killed and crippled every year because of half-blind, half-minded, half-dazed, inconsiderate, not alert automobile operators. If you recall the shootings on the California freeways a bit back, you can see the impatience and frustration motorists experience. Life is becoming too fast paced. Folks have to rush, rush, rush all the time, and forgot how to take their time and enjoy life. Folks are becoming too inconsiderate and thinking too much about number one, and not enough about the other person. I would definitely like to see a law passed where anybody hitting a cycle of any kind would get the book thrown at them with a minimum of a $10,000 fine and one year in jail! There, now you know how I feel. Back to computer news.

* Dan Jerome called to my attention that there was an **error in my last H-SCOOP**, issue 123 on page 5 where we are **discussing bugs in PC TOOLS Version 5.5**. When exiting the program and you get the error message "DRIVE IS NOT READY", I listed drive A:, B:, C:. Since C: is the logged drive, it does not occur there, but will occur at D:. I apologize for any inconvenience or confusion that this may have caused anybody.

* **Thanks to your May H-SCOOP, I got one of the $600 Z-515 boards**. The gal I talked to at Heath didn't know about the offer; she said there wasn't anyone around she could check with. I told her that I understood the price was $600 and to call me if that was not correct. I got no call, but I got the board. Guess my call was timed just right! Thank you.

It is now installed and works fine. That gives me an awful lot of RAM - 8Mb, but it seemed like the price was right - and if they were going to close them all out. My original board was all extended memory which is fine for Lotus 1-2-3 v.3, but didn't give me enough memory for big spreadsheets in v. 2.2. Now I have 2 Mb of expanded memory. Also, I should have enough RAM of OS/2 when I eventually decide to use it. So far, I don't see the need for OS/2. M. Burggraaf/ 1942 St. Mary's Dr./ Salt Lake City, UT 84108 (801) 581-9144.

* **The ZDS/Bull connection is very interesting**--The Annals of the History of Computing (vol.11, #4, 1989 has an article on the development of Bull (Bull: A World wide company born in Europe, by Pierre E. Mounier-Kuhn, pp.279-298). It has a long history of involvement with various companies, not always successfully! Robert J. Miller/ 1347 Country Club Drive/ Camano Island, WA 98292

* **Read the article about the H25 printer and the PC/XT/AT serial ports in issue #123**. I have also been down this road. After about

three hours, I finally managed to get the H25 printer working with my AT clone. Hope someone else will find the following information helpful. Good luck with your new venture.

Pin configuration from PC serial DB25 serial port to H25 serial port is as follows: 1-1; 2-3; 3-2; 4-8; 5,6,8(tied together)-4,5(tied together); 7- 7; 20-6.

H25 dip switches: Busy - (0) Off; DC1/DC3 - (1) On; Parity - Even; ETX/ACK - (0) Off.

I have a MODE command in my AUTOEXEC.BAT file as follows:

MODE COMx: 9600,E,7,1,P

It's nice to still be using the H25 printer. It doesn't do fancy things but it sure has been reliable for me. Bob Gregory

* Cheque for renewal is enclosed. **Enjoy reading H-SCOOP** even though some of the time I'm not quite sure about what is being covered. Provokes a lot of thought.

Thanks again for your interest. If it weren't for people like you and Peter Shkabara and others, most of the people like me would be way up the proverbial creek with no means of locomotion. Thanks again. Fred Garcia/ 11903 N 77th Dr/ Peoria, AZ 85345-8251

* **I spoke to Paul Herman on the CIS editorial I had last month. He informed me he too has been burnt by files on the GO ZENITH forum** that were not public domain programs. Paul said he had reported that some mouse software which was specifically licensed by him were found on CIS in a ZIP file. He wrote to the Sysop and the files were pulled, but never a word to Paul, not even an apology.

* **Had a real nightmare trying to install 6 megs of RAM in a Z248/12.** According to the book and the tech manual, you simply remove the 256K SIMMs and add a total of 6 banks of the 1 meg SIMMs. Not true. It turns out that a jumper is involved. To the left of the SIMMs is a jumper, J103 on the system I was working on. Factory setting (for 1 and 3 megs) it should be 2-3. For 6 megs, it must be set for 1-2. And a total of 2 megs is all the system will let you have for extended memory. If you want to use all the memory, it must be EMS.

* Have been hearing lots of good things about **computer insurance.** You may be interested in full coverage for your micro products. If your homeowners policy or your business policy does not specifically cover your system (all hardware and software purchased) after a $50 deductible, then check out SAFEWARE/ 2929 N High St/ POB 2211/ Columbus, OH 43202/ (800) 848-3469, (614) 262-0559. Up to $2000 coverage is $49/year. Up to $5000 is $69/year. Coverage includes theft, fire, vandalism, natural disasters and accidental damage. Even power surges are covered. Equipment also is covered while in transit for up to a $10000 total, depending on your policy.

* Notice how in the old days there was COM1:, and COM2:? **Now you can use up to COM4:.** I guess there was a change in the BIOS and DOS somewhere along the line that allowed PC's to recognize and use the extra COM ports.

* Hmmm. **Remember the PCTechnologies accelerator 286 card** we used to sell until PCT went bankrupt overnight leaving everyone stranded? Whatever happened to them. I don't know, but my latest Radio Shack flyer has a 286 express board for the Tandy computers, and you can easily see PCT's trade mark and name on the box!

* Art Pease contacted me about his theory about some **problems of Windows 3 not running properly on some Z386/16 models of computers.** He thinks the Z525 cache board may be

the culprit in some systems, specifically a PAL on the board. Some systems seem to run Windows fine, and some do not. U728 was a 444-572-00 part number and that seems to give problems. An upgrade was available to 444-572-01, which all new boards should contain. Boards with the proper upgrade should be part number 181-7320-1F or later. They already have had the PAL change. If you have the cache board and are having problems, especially with Windows, check this PAL and if not the -01 revision, try to upgrade it.

TECH FORUM

USING A MODEM
ON THE EaZy PC MOUSE PORT

ZDS produced many EaZy PC computers thinking it would be a great low-cost computer. Problem is, it was too expensive, too limited, and came too late. The product line died quite rapidly, with ZDS discontinuing the expansion memory and modem accessories far too early in the life cycle, demonstrating their mistake in production and non-support of the computer. They liquidated thousands of them and they are now being sold in liquidation catalogs at far below the original dealer cost.

Earlier in this newsletter we gave you news on the memory expansion being produced at this moment. Now we bring you the rest of the story, how to use a modem with the mouse port. The combination of these two items will help those who have the EaZy PC systems which ZDS has abandoned! Many thanks to H/Z guru Dave Brockman for this info.

The mouse port appears to be a standard 8250-type serial port with an AT-type 9-pin serial port minus a few input signals. In reality, there is no 8250 serial chip in the EaZy PC which is the standard UART used for serial port/modem communication. It is simulated instead using the serial port built into the V40 microprocessor used by the EaZy PC.

The mouse port is physically addressed as COM2 but, because of the way things work, it will be recognized by DOS as COM1 if it is the only serial port present. This means that if you want to use the DOS MODE command to setup the port, use COM1. However, if you have a program (like QMODEM) which directly access the serial port, use COM2. The mouse port supports only the standard baud rates (110, 150, 300, 600, 1200, 2400, 4800, 9600 and 19200.) Nonstandard rates will not work.

The missing signals are Carrier Detect (pin-1), Data Set Ready (pin-6) and Clear To Send (pin-8). Because of the way the EaZy PC emulates the serial port, these signals will always appear to be true when read by software. Whether this will have any effect depends on the modem program being used. Some programs won't mind; some will.

The mouse port has been used with the popular shareware modem program, QMODEM, and a 1200 baud Hayes compatible modem successfully. To do this, a special cable was made up and wired as follows:

EaZy PC	MODEM
DB9S	DB25P
2	3
3	2
4	20
5	7

The first time that QMODEM was run, it was configured via the Setup menu for a generic Hayes clone (Modem, Quick Modem Config!), the COM2 port (Modem, Communications Parameters, J, 2) and the 16550 UART Enable was set off (Options, Runtime Parms, 16550 UART Enable).

Many thanks to Dave for solving yet another problem left by Zenith Data System's sudden discontinuance of the modem option for the EaZy PC computer.

CLASSIFIEDS

Classified ads can be placed in this section free of charge by any H-SCOOP subscriber. Non-subscriber's ads are placed at $10 per insertion in advance. Ads to appear more than once must be submitted separately each month publication is desired - maximum 2 months with 2 month wait. When placing ads, try to keep in mind the 'devaluation' of computers and components and adjust your price accordingly.

FOR SALE: I have the two Z89 Parts and Software for sale. I prefer to sell it in one lot but will sell each if I have to.

Z89 with hard sector board, one drive installed and expanded memory, Z37 controller board with separate 77 cabinet and two 96TPI drives installed. This machine will copy hard sector to soft sector and numerous other things; Z89 with hard sector board and one 48TPI drive and 32k; One Z89 mock up kit for repairs of Z89 part #HE 204-2951; 1 set of Z89 power supply transistor heat sinks; Z89 power supply 071279 with capacitors and diodes - the whole board; Z89 power supply transistors U101 and U102; Z89 transistors 442-650; Z89 blower motor model 126LJ; Z89 cassette I/O board; 1 new 96PI drive still in factory box - Zenith Service Center cost in 1982 was $434.00; One new logic board for Z89; 2 used 48 TPI drives.
SOFTWARE LISTED BELOW:
Inventory management (HRS-837-5 (595-2634-01), NEW, never used; Basic 80 Microsoft HMS-837-1, NEW, never used; HDOS 2 manuals; H89-17 Software reference manuals 595-2334-01; Numerous service manuals for Z89, circuit diagrams and Zenith Service Center Service Bulletin Service Tips on Z89.

I also have one Z19 machine that was shipped in for repair and was not packed properly and the CRT broke loose in shipment. Not worth repair. There is a lot of good parts left in this machine and if I sell the Z89', parts, software in one lot I will give it to that person for shipping cost.

I have a lot of Z100 parts but I am not ready to dispose of them less than retail as I am still servicing Z100's.

I might have some other old Zenith service manuals if you request them.

The above equipment, parts and software cost around $5000.00 - Zenith Service Center cost when new. I know it is not worth much now, but make me an offer and I might let you have it. Harry Bailey/ P.O. Box 6487/ Pananma City, FL 32404

FOR SALE--I have a Kres Engineering 2/4 MHz mod kit (DSM-240) for an H-89. I intended to install it in my H-89, but got an H-151 instead. The kit is still in the box. I'll be glad to ship it (prepaid) to someone upon receipt of $25. M. Burggraaf/ 1942 St. Mary's Dr./ Salt Lake City, UT 84108; (801) 581-9144.

REPORT

SOTA386 SX ACCELERATOR AND H/Z151

Editors note: Ron Pannatoni spent lots of time and money fully evaluating the Sota 386 SX accelerator board in his 151 computer. He has left me pages of information on my bulletin board, which are too lengthy to include here. I will compile all of this and send it to SOTA and see what their reaction is. I will also include all this doc with a documentation package we include when people purchase the board. I thank Ron for the countless

hours and the money he has spent evaluating this board. He had lots of support problems from Sota, uncovered what may be some misleading claims (or even false advertising) about the board as far as expanding the cache and other areas, and was more thorough than I could imagine an individual could be. But he pulled through.

We will continue to sell this board, because it works with Zenith/Heath/Bull computers, and because it is a good board. However, at this point I cannot recommend the end user purchase any additional cache RAM or the memory expansion 16i board. For a accelerator only, which is what we picked up the board for, the board appears to be top notch.

This report was much longer than I though it would be, and there is no way to make it fit in one part. Thus we will continue it next month. Because of the length, some of our regular columns will not appear in this issue. We'll catch up next month.

INTRODUCTION: I have been using the SOTA 386si accelerator board in my Z151 computer for five months. This board uses an 80386SX microprocessor operating at 16Mhz, which effectively replaces the 8088 on the Zenith CPU board. It has a socket for the 80387SX numeric coprocessor, which is installed on my board. The 386si includes a 16K byte direct-mapped memory cache. This cache memory consists of SRAM operating without wait states. It retains code and data that occur in certain "small" program loops and makes this information directly available to the microprocessors on the 386si much faster than system memory in the Z151 can.

When this combination in my Z151, FORTRAN programs run from four to five times faster than they did when the Z151 was using an 8087 coprocessor. The Microsoft FORTRAN compiler (version 4.01) and the Personal Tex document preparation program PCTeX (version 2.1) run three to four times faster than they did before the 386si was installed.

PREPARATIONS: Before you even consider the 386si for your Z151, examine the CPU board in your computer. The 386si will not work with every Z151. The reason is that not every Z151 uses an 8088 microprocessor. Zenith made some CPU boards with an 80C88 microprocessor. The 8088 and the 80C88 are not directly interchangeable because they use different timing signals on the interrupt line. The SOTA 386si board cannot be used with a computer that uses an 80C88.

According to the 1984 technical manuals for the Z151, Zenith made four kinds of CPU boards for the Z151. One used the 80C88. It can be identified by the assembly number 85-3017-1 that is printed at the very top of the board. (This differs from the Heath part number of the populated board, which is HE-181-5059.) Refer to Figure 1 for the location of this part number and other items discussed in this section. Assembly numbers of boards that use the 8088 are 85-2889-1 (181-5574) and 85-3000 (181-4646 and 181-5442). Remove the CPU board even though you can read the part number while the board is in its expansion slot. Before removing this board, disconnect the speaker/LED plug at position P201 and the keyboard plug at position P202. The 8088 or 80C88 is located at position U212 on the board. The number of the microprocessor is printed on top of the chip. If you are still uncertain whether your CPU board uses the 8088, then look at position U231 on the CPU board. This position should have just an empty socket. If a chip is there, then you are out of luck, because this chip is a flip-flop that adjusts the interrupt timing signal for the 80C88.

If your CPU board uses an 8088, then your next step is to check the monitor ROM's on the board at U207 and U208. The revision level of these ROM's must be at least 16. The current revision level is 18. The revision level corresponds to the last two numbers in the Heath part numbers that are printed on the labels pasted to the tops of these chips. Thus, the current ROM 1 is 444-229-18 and the current ROM 2 is 444-260-18. Before you do

anything else, get the new ROM's, if necessary, and install them.

Broken lines are used in Figure 1 to show the outline of the VMM150 daughterboard designed by Dante Bencivengo for disabling the Zenith video board. This board hangs slightly over ROM 2. If you use a VMM150, then you must remove it in order to change ROM 2. Be careful removing the VMM150. It has very fragile pins that can be damaged easily.

I have found it very useful to have a reset pushbutton. Reasons for this are given later. Parts for the reset pushbutton can be obtained for a few dollars at Radio Shack. It is just a pushbutton in series with a 3300 ohm 1/2 watt resistor. I used wires with E-Z hook connectors to connect it across capacitor C207 as shown schematically in Figure 1. The pushbutton should be normally open. Closing the switch by pushing the button for a second will reset the computer under most conditions.

It may also be necessary to remove some RAM chips from memory. If you use the MegaRAM150 from FBE, then you should remove the chips from banks 3 and 4 of the main memory board. The FBE RAM disk is not compatible with the 386si, and it used the memory in these banks. Remove the FBE RAM disk driver from your CONFIG.SYS file as well. I have found that the 386si can be used with 704K Z151 system memory in this way or with 640K bytes using the RAMPal from Software Wizardry. Dave Brockman at FBE has heard that the 386si also works with his ZP640Plus pal and 640K or 704K bytes of system memory [sold by Quikdata for $17].

Once you have the right ROM's and a reset button, and the memory has been configured as discussed above, go ahead and get the 386si.

INSTALLATION: The first thing to do when you get the 386si is to read the manual. Besides being a good idea for its own sake, reading the manual may reveal points in this article that do not apply to you because of product changes. My manual is dated 8/21/89 and my SOTA Utility Diskette is version 2.20. This article pertains only to these revision levels.

Review the jumper settings as explained in the manual and as you find them on your board. In the section of the manual about installing the optional 80387SX, make a notation that jumper JP5 must be reset to indicate the presence of this chip when you install it. My manual does not mention the jumper in this section.

If you do install the 80387SX, be very careful to follow the directions in the SOTA manual. If you want to remove the 80387SX from its socket later, you will require an extraction tool for this purpose. Call Intel's Customer Support at 800-538-3373 if you are in the United States or Canada; otherwise call 503-629-7354. An extraction tool will be sent to you by express mail. In particular, if you install the chip wrong, wait for this tool before trying to correct the error and DO NOT use the 386si while you wait.

You must remove the 8088 from the CPU board and put it in a socket on the 386si as the manual from SOTA explains. If you have an 8087 in the Z151, it must be removed. Refer again to Figure 1. The 8087 is located at position U213 on the CPU board. When you remove it, you must also make an adjustment to the DIP module SW1. Eight switches are on this module. Orient the CPU board with the rear retaining bracket on the right as shown in Figure 1. The second switch from the top of SW1 is switch 1; the numbering begins with 0. Switch 1 must be moved all the way over to the right, which is the 'ON' position. This setting indicates that the 8087 is not present on the CPU board.

A 40 wire ribbon connects the 386si to the 8088 socket on the CPU board. The manual from SOTA illustrates one way to route this ribbon between the boards, but I did not follow it. I have three objections to routing the ribbon in this way. First, the ribbon and its connectors would be placed under a lot of tension.

Second, the ribbon would cover the socket for the 80387SX and deprive this chip of ventilation. This is bad because the 80387SX gets very hot when it operates, and it can be damaged by its own heat. The socket for the 80387SX is located at the bottom of the 386si, where there is not much air flow. Third, the ribbon would press against sharp leads that protrude from the back of the CPU board. I think that some of these leads could push through the ribbon insulation and possibly create shorts.

Figure 2 shows how I prepared the ribbon for my computer. At the top of this Figure there is a key for interpreting what a fold into a "valley" and what a fold into a "ridge" mean. Placement of the folds in the ribbon is shown in the center of the Figure. I have not given exact dimensions since you may choose a different location for your 386si from the one that I use, which is the second slot to the left of the CPU board as viewed from the front of the Z151. There is no memory board between my 386si and the CPU board. The VMM150 let me move it to the slot where the Zenith video board used to be. Nevertheless, I left open the slot that the memory board used to occupy in order to provide additional ventilation for the 80387SX. My reset pushbutton is installed in the rear retaining bracket for this slot. The bottom of the Figure shows what the ribbon will look like after it is folded. You might decide where to place the folds as follows. Put the CPU board back in its slot and plug the 386si in the expansion slot that you have chosen for it. Then cut a 14 inch by 2 inch strip of paper and make the folds in this strip. By trial and error you should be able to determine a suitable placement of the folds that will connect this paper "ribbon" between the connectors on the 386si and the CPU boards. Make sure that the 80387SX socket is left exposed. Then transfer the folds to the wire ribbon. This procedure avoids flexing the ribbon too much, which could fracture the wires in it. [The cables are also available in 24" lengths from Quikdata - if a longer cable is desired, let us know].

SOTA advises to put the 386si board as close to the CPU board as possible and to keep your video board as far from the 386si as possible. My Hercules RAMFont board is located in the far left expansion slot of the Z151 for this reason. My Xebec hard disk controller board is next to the video board, and the slot between the Xebec board and the 386si is empty.

OPERATION: To use the 386si for the first time, set the toggle switch at the rear of the board to the upward position. With this setting, the 386si basically emulates the operation of an 8088 running at 4 Megahertz.

Turn your Z151 on and boot up. Prepare a new CONFIG.SYS file to include the device driver for the 386si board. It should be the first device driver in your file.

For example, I boot from a floppy disk, and my CONFIG.SYS file begins as follows.
FILES=30
BUFFERS=20
DEVICE=386SI.SYS /NOTEST /NODMA /NOVIDEO /TOP=704
...

The /NOTEST and /NODMA switches are recommended by SOTA specifically for Zenith computers. Although I have had no trouble operating the system without these switches, I include them anyway. The /NOVIDEO switch tells the driver not to let the cache memory capture video data. I use it because my programs do not need a fast display. The /TOP=704 switch tells the driver to let the cache memory capture information in the first 704K bytes of system memory, the amount that is in my Z151.

After creating and saving the new CONFIG.SYS file, put the toggle switch at the rear of the 386si board in the downward position. This action should cause the computer to reset itself, and the monitor prompt should appear. Since there are software methods that duplicate the speed functions of the toggle switch, you should not have to move the switch too much from now on. These software methods are discussed below. I use the toggle

switch in the upward position only to run tests from Zenith's disk based diagnostics package. If the computer does not reset itself, press the reset pushbutton once. Do not keep it pressed for longer than a second. If the computer still does not reset itself, then shut the power off and review the installation. If you find no error in the installation, then you need to get technical help from SOTA.

When you boot the computer with the toggle switch in the downward position, the cache driver in the new CONFIG.SYS file should produce a message on the monitor. This message should end with the line

Driver Installed OK - 16K cache initialized

From this point, the booting operation should proceed as normal. Your system will be working at high speed, however.

There are two software methods to change the processing speed of the Z151 when the 386si is installed. One method uses a "hot key" combination, CTL-ALT-Num5 ("Num5" means the "5" key on the numeric keypad). Pressing these "hot keys" acts as a toggle changing the current speed of the system to the other speed. The second method uses a utility program, 386SI.COM. Type **386SI /CACHEON**, to put the system in high speed operation, or type **386SI /CACHEOFF**, to put the system in low speed operation. Of course, the utility 386SI.COM must reside in your current path if you use this method.

Neither method causes the computer to reset itself. As far as I can tell, neither method actually disables the cache memory. For example, when I first installed the 386si, I was using the RAM disk from FBE's MegaRAM150. This RAM disk coexists with system memory using a bank-switching technique. I expected that it would continue to work if the cache on the 386si were disabled. When I used the 386SI.COM utility with the /CACHEOFF switch, however, the RAM disk did not work. Memory "parity check" errors were generated by the monitor. I had to stop using this RAM disk. I assume the problem was caused by a confusion of system data with RAM disk data in the cache memory, but I cannot prove this claim.

I have verified that both of these methods work on my system by using them to run two programs that are sensitive to the system speed. One of the programs is a file transfer utility for sending information back and forth between the Z151 and an H89 through serial ports in these computers. Running this program on the Z151 with the 386si in high speed mode causes the system to lock up, but there is no problem running it in low speed mode. The other program is REACH/86, a communications package from The Software Toolworks. The same comments apply to it.

The Z151 is supposed to reset itself seconds after the power is turned on, but with the 386si installed, my computer does not always behave this way. A problem often occurs after the computer has been turned on and off. When the computer is turned on for the first time in the day, it resets itself properly. Suppose the computer is turned off after being in use for longer than a few minutes. If the power is turned on again, the computer might not reset itself. All the LED's at the top of the CPU board shine in this case. This problem can occur even if the power has been off for as long as two hours.

A failure of the computer to reset itself may also occur after an attempt to warm boot by pressing the CTL-ALT-DEL keys when the computer is operating.

I do not know what causes these problems. If I press the reset pushbutton once or twice, however, the LED's will go out in sequence, and the monitor prompt will appear. This is why I recommend installing the reset pushbutton.

It has been necessary for me to use the hard disk caching utility SOTACACH.COM provided by SOTA. It could be included in an
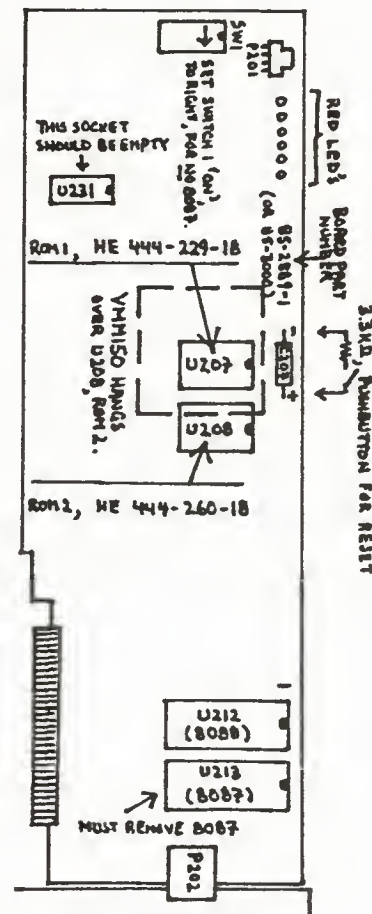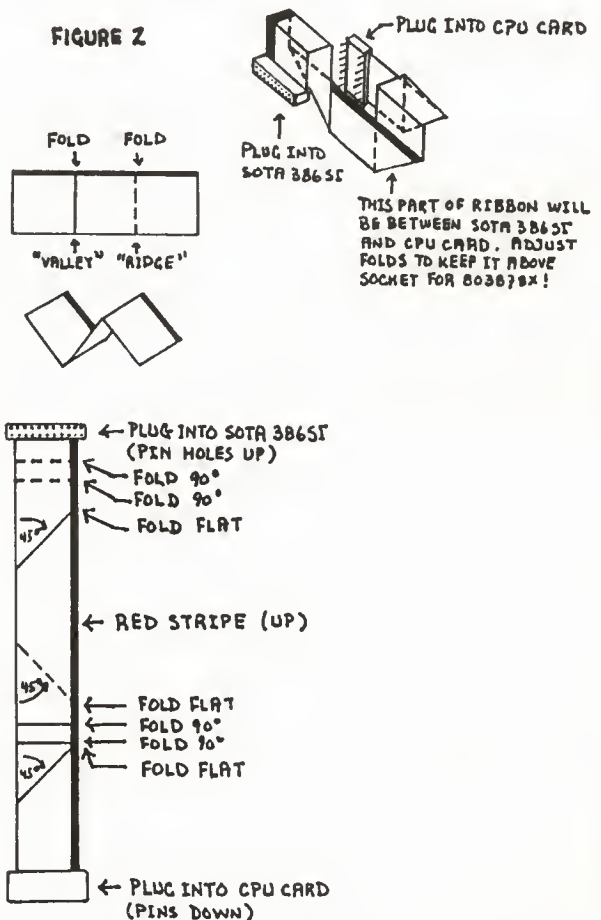

FIGURE 1

FIGURE 2

AUTOEXEC.BAT file, but I invoke it from the keyboard as follows: **SOTACACH /DOS=16**. This command establishes a 16K byte hard disk cache in DOS memory. If I do not use a hard disk cache, then my hard disk works longer and makes more noise than it did when I used DOS 2. SOTA acknowledges that slower hard disk operation is a consequence of using the 386si. Using this 16K byte hard disk cache actually requires about 20K bytes of DOS memory. It seems to restore the performance of the hard disk to its level under DOS 2. Increasing the size of the cache above 16K bytes does not seem to improve the performance of my hard disk further.

I also recommend using DOS 3.3+ or higher. For several months I used DOS 2.11 with the 386si. Under DOS 2, however, switches for the device drivers provided by SOTA are not recognized in the CONFIG.SYS file. This behavior is due to a change in the command line syntax that was adopted by Microsoft in going from version 2 to version 3 of DOS. For example, I could not use the RAM disk utility SOTADISK.SYS in the CONFIG.SYS file under DOS 2.11. The size of this RAM disk is set by a switch in the following way: **DEVICE=SOTADISK.SYS /DOS=nnn**, where 'nnn' specifies the size of the disk in kilobytes. No matter what value I entered, it would be ignored by the system. I use Zenith DOS 3.3+ now, and the switches are recognized properly by this DOS.

I have verified that various print functions continue to work on the Z151 with the 386si installed. I have printed ASCII files, I have printed graphics files with PCDOT from Personal TeX, and I have printed screen dumps with the Hercules HGC HPRINT utility.

Finally, I have verified that the system clock is keeping the right time. It was important to check the system clock because the validity of the benchmarks discussed in the next section depends on the accuracy of the time kept by this clock.

We will conclude this article next month.

QUIKDATA BITS

You should have received your newsletter early. I wanted to get it out to give you time to remember that we will be closed and give you a few days to tie up any lose ends you may have with ordering, support, etc.

I'm very pleased to report that our **QD line of computers have been selling very well**. I have sold more of these systems in a month than I have sold Zenith computers in a quarter or so. I'm please with the response. Brochures are being prepared so I can send better information out to those interested, so if you want to know more, just let me know. I'm also anticipating a slight price drop in all models by the end of summer.

Now for some deals. I have available to me a **limited number of Heathkit 286-LP Model 40 8Mhz** computers. Features an 80286 8Mhz processor and 1MB RAM operating at 0 wait states. Memory is expandable to 6MB on system board, and it supports EMS ver 4.0, with up to 2MB capable of being allocated to EMS. Systems include two 3.5" 1.4 meg floppy drives, a 28ms 40MB connar IDE hard drive, two serial ports, one parallel port, two open 16-bit expansion slots, VGA video with EGA, CGA, MDA and Hercules video BIOS compatibility (similar to the old Z449 card - not true VGA). Includes battery backup clock, 80W switching power supply, 101 keyboard and DOS 3.2. These are not assembled Zenith systems, but Heathkits and take about an hour to put together. Assembly amounts to placing boards etc., in cabinet, all electronics is already assembled. Cabinet is small AT cabinet similar to Z151, 158, 159 computer. Assembled Zenith model listed at $2,899. I will **make them available for $995 which includes UPS ground shipping**. Add a monitor and you have a great AT computer. For those not wanting to assemble, we will do that and ship out for an additional $10o. If you are interested in this deal, let me know right away before they are gone. This is one of the best deals I have ever seen and you have first choice.

If you are looking for a good entry PC computer, we will make a special deal on our QD88/12 until stock is exhausted. This is our own QD model with 640K RAM, 360K floppy drive, clock/calendar with battery backup, full size 4 bay cabinet with turbo/Reset button and key lock, 150W switching power supply, 8 expansion slots, parallel port, serial port, game port and 101 keyboard. I have a limited number that I can throw in a free green TTL monitor for a total price of $495. If you want a second floppy I have used ones I can install for $45, or new at $75. For $250, I'll add a 21mb hard drive. DOS not included, $75 will buy a copy if needed.

I have a few Zenith computers left that I want to get rid of at an excellent price, and you have first choice. I have one dealer demo **TurbosPort 386** with 2MB RAM, 40MB hard drive, 1.4 meg floppy, 2400 baud modem, DOS. $2495. Full warranty.

One MinisPort with 2" floppy and 1 meg total RAM (can have 360K Ramdrive) with DOS built-in ROM, file transfer software. Brand new, full warranty. $745

One MinisPort same as above but 2MB RAM to give over 1.3 meg ramdrive for $1095. Brand new and full warranty.

One Z159 with 84 keyboard, two floppy drives, hercules video card, 768K RAM, DOS included. Brand new, full warranty for $745

Trying to get out catalogs, but it's been a very hard time. May have to break down and hire somebody, and if this business continues, even move the business to a larger facility. I'm going full steam ahead on the catalogs as soon as this issue gets to press. They should be available late in July. We've been holding off because of our new product line of computers, many price changes, many new additions, and some strange things transpiring at Zenith. More on that later. Appreciate the support you have all shown.